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ABSTRACT

This report describes a program employing the theory of multiple intelligences and individual learning style in order to increase time on task, increase retention of academic material, and decrease fluctuations in distracting behaviors in classrooms. Seventeen third grade students in the targeted classroom of an elementary school were surveyed on students' preferences in learning styles and teaching methods related to the 7 intelligences. In addition, academic assessments, teacher observations, parent questionnaires, student questionnaires, and interviews were analyzed. The results indicated that analyzing students' needs and preferences, and making accommodations to conform to those needs in the classroom, encouraged students to become increasingly engaged in their learning. This strategy also resulted in increased time on task, decreased behavioral problems, and increased retention of academic materials by the targeted students. Seven appendices contain samples of the forms for the student survey, parent survey, student observation, student interviews, lesson plans, accommodations based on classroom accommodations, and examples of culminating activities for the study of the Middle Ages. Contains 30 references. (AP)

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ED 388 397

ADDRESSING MULTIPLE INTELLIGENCES AND LEARNING STYLES: CREATING ACTIVE LEARNERS

by

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Submitted in partial fulfillment of the requirements for the degree of Master's of Arts in Teaching and Leadership

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Field-Based Master's Program

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Abstract

AUTHOR: Rebekah Lindvall **SITE:** Rockford, IL
DATE: September, 1994

TITLE: Using Multiple Intelligences and Learning Style to Improve Student Engagement in Learning

Abstract: This report describes a program employing the theory of multiple intelligences and learning style preference, to increase time on task, increase retention of academic material, and decrease fluctuations in distracting behavior by students in the targeted classroom, documented in theory by knowledgeable others, and documented empirically through academic assessment, teacher observation, parent questionnaires, student questionnaires and interviews. The classroom population consisted of third grade students living in a growing community located in northern Illinois.

Analysis of probable cause data revealed students lack interest when passively interacting with their environment. Reviews of curricula content and instructional strategies revealed a deficit in providing materials and activities that engaged students in the learning process and a deficit in teaching to the strengths of each student.

Solution strategies suggested by experts, combined with an analysis of the setting, has resulted in the selection of two major interventions: administering student inventories on learning style and multiple intelligences, and altering curricula and teaching strategies to enhance students' engagement in learning.

Results indicate that analyzing students' needs and preferences, and making accommodations to conform to those needs in the classroom, encourages students to become increasingly engaged in their learning. This results in increased time on task, decreased behavioral problems, and increased retention of academic material.

Chapter 1

PROBLEM STATEMENT AND COMMUNITY BACKGROUND

General Statement of the Problem

Students of the targeted population exhibit fluctuations in: time on task, retention of academic material, and appropriate behavior, as evidenced by teacher observation and inventories, student and parent questionnaires, and academic assessment.

Immediate Problem Context

The problem site is an elementary school in Rockford, Illinois. The school building is located in the northeast quadrant of the city, which is considered a high income area with a predominantly majority population. The school enrollment consists primarily of children from the neighborhood. Voluntary transfer and bussing of minority students, along with children from Little People's Place, a Title 20 Day Care Center, help the school meet desegregation outlines mandated by the Rockford School District.

The racial make-up of the neighborhood surrounding the school accounts for the low percentage of minority students in attendance. With an enrollment of 498 students, the racial and ethnic population is the following: White 80.5 percent, Black 16.5 percent, Hispanic 0.8 percent, Asian/Pacific Islander 2.0 percent, and Native American 0.2 percent. The Rockford School District's minority enrollment totals 33.6 percent in comparison to the school's total of 19.5 percent.

Of the 36 employees at the school, there is one minority on staff compared to the 7.7 percent minority employees in the district. However, district employees that service the school, as well as volunteers at the school, are of varied races and ethnic backgrounds.

The school building houses 22 classrooms, 19 of which hold kindergarten through sixth grade classes. The remaining rooms are used for art class, music class, and computer lab. There are also offices used by the principal, secretary, nurse, and special education resource worker. In addition There is a gymnasium, library, teacher work room, and conference room.

The staff consists of 19 classroom teachers, a principal, a music specialist, an art specialist, a physical education specialist, a secretary, a full time special education resource teacher, a librarian, a building engineer, a night custodian, three food service employees, a full time teacher's aide and a

noon time aide. According to the Rockford Public School Staff directory (1993), the school is serviced by the Rockford District's speech and language department, and multi-disciplinary team. The multi-disciplinary team consists of social workers, psychologists and a nurse. A curriculum implementor is assigned to to facilitate staff development. There is a very active parent teacher organization and numerous parent volunteers.

The school is a regular elementary education facility, not housing any specialty classes, such as behavioral disorder classes, or learning disability classes. There are three rooms of each grade level from kindergarten through sixth grade. The school is classified as a C - 9 school, meaning it is not targeted as having an at-risk population nor is it in need of any additional funds made available from the desegregation lawsuit. Each class consists of children at the age level appropriate for that grade, according to state mandates. Classroom teachers are responsible for the implementation of curricula and programming for the grade level they are servicing. Inclusion students are assigned to classrooms and the teacher is aided by the resources available in the Rockford district.

The curriculum at the school consists of: math, with each grade level using text published by Scott Forseman; science, with text by the same

company; language, books are grade level and published by Silver Burdett. Social studies is taught in each grade with the text available for use. Many classrooms do not use the social studies book, rather the grade level material is covered through literature-based study.

The reading program can not be classified as either whole language or basal oriented. The majority of primary classes use a whole language approach, but the middle grades use a basal reader. Music is taught twice a week for thirty minute periods to each classroom, as is physical education. One extended art class of 45 minutes is also incorporated into the weekly schedule.

Curricular guides are provided, but not used exclusively as a format for the studies in each classroom. The majority of teachers use a thematic approach, incorporating all subjects into the theme of study. Teachers are given a high degree of freedom and flexibility as to how to present material.

The Surrounding Community

The city of Rockford is historically a manufacturing community. It is the second largest city in Illinois and boasts of quick and easy access to Chicago. Many subdivisions have recently been built, primarily in the northeast and southeast quadrants of the city. A number of the new residents are commuters

from the Chicago area. The primary reason for this growth is the reasonable cost of housing and reasonable cost of living in Rockford, compared to the Chicago suburbs. This has had a major effect on school demographics, with the east side schools filled to and beyond capacity and the west side schools well below maximum enrollment.

The school has developing subdivisions within its boundaries. As recently as 1990, the school held 650 students, 150 over capacity. This was rectified when another school was opened in the area to help carry the burden of the overcrowding. Yet, the school has held, and is projected in the fall of 1994, to house 90 percent of its maximum capacity.

According to the 1990 census, the population of Rockford is 139,426. Also stated in the census is that 77.9 of the Rockford population is White, 14.4 percent Black, 4.0 percent Hispanic, 1.5 percent Asian/Pacific Islander and .2 percent Native American. The per capita income is $14,109. An update indicates that in 1992 the median household income was $28,282. (Rockford Illinois Fact Sheet, 1993) This is not representative of the neighborhood surrounding the school, where according to the Rockford Register Star, (July 1994), the average listing price of a home is $180,000. A median priced home in Rockford during the week of July 10,1994 was priced at $76,500 (Rockford

Register Star, 1994).

Data on education level in Rockford indicate that, of adults 25 years of age and older, 74.8 percent have completed high school and 18.7 percent have earned a bachelors degree or more. Post high school education is available in Rockford from a two- year junior college, a four- year private college and a state university approximately 40 miles away.

Rockford has 42 elementary schools, four middle schools, and four high schools. At the elementary level, there is a total enrollment of 27,314 students. Racial ethnic breakdown is 67.4 White, 23.7 percent Black, 6.0 percent Hispanic, 2.6 percent Asian/Pacific Islander, and 0.3 percent Native American. The district statistics show 30.5 percent of students are from low income homes and 2.8 percent are limited English proficient. In comparison, the school has 11.4 percent enrollment from low income families and 1.8 percent enrollment of limited English proficient backgrounds. Average class size in the district is 23 students in grades kindergarten through sixth, yet at this school average class sizes are larger than those of the district. (Rockford School Report Card, 1993)

Central to the description of the schools in the Rockford community, is the discrimination lawsuit that is now being settled. This lawsuit, filed in May of

1989 in the District Court, charges the district with long-standing discrimination against minority students. As of this date, the district has been found guilty of discrimination and has been put under the supervision of a Master, who sees that the court orders and guidelines are being followed. At this time, extra money has been designated to those 14 schools that were targeted as at - risk schools, with predominantly low income and minority populations and labeled community academies, or C-8 schools. The majority of these schools are located on the southwest side of Rockford or in low income areas on the southeast side of the city. Plans to increase test scores and provide the schools with additional programming and staff development are under way. Additionally, the plan calls for the operation of three magnet schools to promote voluntary integration into the C-8 buildings. Neighborhood children, as well as majority students, would be bussed to the magnet schools. Another agreement reached in the suit is the voluntary bussing of minority students to schools of predominantly majority population. As of this date, 79 percent of the district's elementary schools have become integrated.

This court settlement impacts the entire community. The targeted school is affected by a lessening of operating dollars. Additional impact comes from the voluntary bussing order and the addition of a Title 20 Day Care Center to the

school population. Title 20 day-care is provided for individuals who have a below average income level and who pay for day-care on a sliding scale that is subsidized by the state.

In January 1994, Rockford hired a new superintendent of schools. The superintendent hopes to have a powerful impact on the equalization of education in the city. He has made many personnel changes in the top administrative offices and has transferred numerous principals in Rockford (Rockford Register Star, 1994 p.A-1).

State and National Context of the Problem

Traditionally, schools and education have been cognitively based, relying on verbal linguistic and logical mathematical intelligences. Often, students who are not talented in these areas, have their areas of proficiency go untapped. In the 1980s, alternative intelligence theories developed by Robert Sternberg (1985),Stephen Ceci (1990), David Feldman (1990), and Howard Gardener (1993), stated that children must be educated in alternative ways. Standards need not be lowered in the traditional sense, but altered to include assessment of a broader spectrum of learning styles and gifts. With the acknowledgment that many intelligences are found within each person, came the challenge of

tapping into them (Lazear, 1991). In utilizing the multiple intelligence theory as a delivery system, the student will become a more active participant in the learning process by virtue of the administration and inclusion of appropriate activities.

It must be stated that learning is a verb. As defined in The New Webster Dictionary (1990), to learn, is to get knowledge of or skill in an art, trade, by study, and or experience. The key word is experience. To learn, one must experience. An individual does not experience when being taught by the traditional method of " pour and store". Many may argue that traditional ways of teaching work because many students perform well on standardized tests. If this is true, why then are we turning out high school graduates who are not proficient in the basic skills needed to function as productive adults? Gross (1991) explains that the reason students are able to perform on standardized tests, as well as teacher made short answer assessments, is that the information they seem to have learned is really only stored in their short term memory. If assessed at a later date, as early as a week after the initial assessment, at least 30 percent of the information would be forgotten.

The above retention rate holds true only for those students who show adequate auditory and visual-spatial intelligences. Those who learn in a kinesthetic way are forced to drop out of school because their needs are not

being sufficiently met (Gross, 1991). Additionally, if tracing the educational progression of these students from their entry into formal educational institutions, to the time when they leave, evidence points to needs unfulfilled. A multitude of documented problems ranging from problem behavior, to poor academic performance, to high absentee rates are found.

Smith (1982), observed learning as a transformation that occurs in the brain. Learning then, is the activity of one who learns. Gardener (1991) author of Frames of Mind addresses the subject of learning in his book, The Unschooled Mind: How Children Think and How Schools Should Teach. He describes problems in America's education today, and he reviews evidence that suggests an absence of understanding in the schools. Students have not been taught, to take knowledge and skills, and successfully apply them in new situations. Without this ability to transfer, the education that the students receive is of little worth. Although Gardener suspects this is a global issue, he feels that the American educational system's fixation on the mastery of facts and administration of short answer instruments of assessment makes the problem particularly severe (Gardener, 1992). He continues to say that his greatest fear is that even the "better" students in our schools are just going through the motions of learning. He states that the enemy of learning for understanding is

our rigid curriculum, and the fact that we are adhering to ridiculous time tables for covering material.

As far back as the developmentalists, lead by Piaget, who explained the sensorimotor stage of development, the child is described as being an active, not a passive being. "The more senses involved in the acquisition of experiences the more pronounced the experience will be." (Gardener,1992 p. 34)

Ornstein (1984), states that the greater the number of senses involved in an activity, the greater the chance the activity will impact the brain through the amount of stimulation within the dendritic connections. The dendrites go through an actual physical change when learning takes place. They act similarly to an electrical current, with fibers reaching and touching other dendrites to add them to the electrically charges channels. Therefore, it stands to reason that if children are active participants in their education, and if appropriate motivating activities are available, and if educators modify curricula to allow for exploration in many sensory modes, successful learning is more apt to take place. Children must take an active role from the beginning of the educational process. They must be involved in the planning, the process, the product, and the assessment of their learning. The teacher and child must investigate the learning style and conditions under which the child is most productive. Research indicates the

educational process as it stands today must be re-evaluated, and alternatives investigated and implemented, to make learning active, authentic, meaningful, and personalized .

Chapter 2

PROBLEM EVIDENCE AND PROBABLE CAUSE

Problem Evidence

In order to document the extent of the problem of fluctuations of time on task, retention of academic material, and amount of appropriate behavior exhibited by the targeted students, anecdotal records of student performance, observation data, student questionnaires, student / teacher conferences, and assessments were recorded over a four month period.

Of the 17 students in the targeted classroom, all have been involved in regularly scheduled weekly student / teacher conferences. These conferences revealed that the students enjoyed school to a greater degree, when they were given opportunities to make choices on how activities and assignments were to be carried out. Fifteen of the seventeen students felt they worked harder, behaved more appropriately, and stayed interested in assignments for longer periods of time, when they were allowed to work with fellow students. All seventeen students admitted that waiting was difficult for them, and during these

lulls they were more likely to act inappropriately due to boredom.

Discipline conferences were held with four of the seventeen students. Action plans resulted from the conferences. The first step of the classroom discipline policy calls for a teacher / student conference with a resulting action plans. If three action plan are written, they are sent home for a parent's signature. The next step in the discipline process is a conference with the student, teacher, and parents. At this time, none of the seventeen students have progressed beyond the creation of two action plans. Reasons for the conferences are: lack of work being handed in, numerous incidences of distracting or disruptive behavior, or academic problems due to lack of effort.

Time on task data showed considerable variation, depending upon what activity the students were engaged in, and their interest level in the activity. During a period of fifteen minutes, on September 22,1994, the classes' incidence of time on task was as little as two minutes, consecutively, for three of the four students targeted for observation. On September 23,1994 during the same time interval of fifteen minutes, there were only two students off- task for less than a minute in each instance. Retention of academic material was recorded from two similar student activities on September 19th and September 28th. On both occasions the students were being read to by the school librarian. On

September 19th, incidences of distractive behaviors numbered 28. On September 28th, four incidences of distracting behavior were observed and noted.

Retention of material was assessed in the form of objective written tests after each of the above sessions. Results are illustrated in Table 1.

Table 1

Test Score Results for the Retention of Academic Material
Sept. 19 and Sept. 28, 1995

Sept. 19		Sept. 28	
Test Grade	Number of Students	Test Grade	Number of Students
100%	4	100 %	8
90%	1	90%	4
80%	0	80%	2
70%	0	70%	3
less than 70%	12	less than 70%	0

Analysis of the data shows a relationship between with time on task and academic performance. It also indicates a relationship between the student's interest and the number of student disruptions. On September 19th, the book read to the students was unrelated to their unit of study. On the 28th the selection was from a chosen area of study. Students were more interested, paid better attention, and performed more accurately on their written assessment.

Probable Cause

To thoroughly examine the probable causes of the problem, one must examine the community. The students have been working in an environment that is both comfortable to them, and meets the expectations of their families, as to what elementary classes are to be like. Obvious problems at the site are difficult to discern because : 1) Parents are unaware that improvements can be made in the ability and comfort levels in which their child learns 2) Parents and teachers are unaware that attention given to learning styles and strengths will promote better quality education. 3) Most faculty members have not delved into information on learning styles. Therefore, they have not been diagnosed, nor have the teaching methods been changed. 4) Using Gardener's seven intelligences as a method of delivery has not been investigated or implemented. 5) Programming, as it stands, is resulting in high scores on standardized tests given annually. 6) Students are generally compliant and respond to authority in teacher - directed classrooms. They are not accustomed to teaching styles that deviate from the traditional. 7) Students are not aware that personal preferences such as mobility, lighting, seating, etc. are indicative of personal learning style. 8) Room size , organization, and furnishings at the facility make it difficult to accommodate the amount of activity deemed necessary for proper student

engagement. 9) Reliance on workbooks is in great disproportion to other kinds of student engagement. 10) The end product of an assignment, rather than the gathering of knowledge and experience, is held in high esteem. Book coverage is of utmost importance. The net result of this is that the community as a whole does not see itself lacking in programming, delivery, or assessment goals.

The more we learn about students, curriculum, teaching methods, and environment, the easier it is to understand why student behavior fluctuates according to the degree of engagement they have in their education.

Literature suggests that there are three main areas where a breakdown can occur and the result can be inappropriate behavior, little time spent on task, and poor academic achievement. According to Dunn and Dunn (1976), the areas which must be considered to determine where the breakdown exists, if classroom problems are present include: the learning environment, the emotional make up of the learner, and the delivery methods of the teacher.

Investigation must include learning conditions. Dunn and Dunn (1976), state that the immediate environment is one of the four factors that directly affect how one learns. If the environment does not consider student preference concerning: sound, temperature tolerance, light, and classroom structure, students could react negatively and not perform up to their ability levels.

Classroom climate is another important factor to include in the examination of the causes of problematic behavior in the school setting. The climate must be evaluated on the amount of student input that is allowed and to what extent it is encouraged. Goodlad (1984), supports Einstein, who believes that it has been nothing short of a miracle that today's modern methods of teaching have not taken the curiosity and love of inquiry away from students. Results of a study by Goodlad (1984), show that nearly 70 percent of the school day is taken up by teacher talk, usually lecture. Over half of 1,000 students polled reported interest in subjects declining with the progression of grade level.

Continued investigation of the probable causes must examine the learner. If a teacher is not determining and responding to strengths, weaknesses, needs, preferences, and interests of the individuals, the students performance may lessen, and behavioral problems may arise in the classroom (Dunn and Dunn 1976).

Lastly, examination should focus on the teacher and teaching methods, programming, method of delivery, curriculum and discipline in the classroom. A breakdown in one or more of the areas mentioned above, may lead to problem behavior and a reduction in academic achievement.

Gardener (1992) , suggests that a detrimental practice in schools today

is the argument over coverage of material verses taking the time to teach for understanding. Many teachers feel that covering pages of predetermined material is the most effective way to teach. Gardner (1992), states that the coverage of material, without the understanding of that material, will result in students being bored with both methodology and delivery.

Parents have preconceived notions as to what should be happening at school that makes it "school". If they sense a deviation from what they are accustomed to, their equilibrium is disrupted and discomfort results. An educated and caring parent will demand accountability.

> Children often find themselves in situations where they have little or no control over what they will learn. No one pays attention to what they feel about their educational lives. Teachers evaluate them, determine what their needs are, and give them teaching materials and techniques that will supposedly help them learn. The children have little input into the process and even less once the process has begun...no one seems to notice the feelings aroused within them by the whole dehumanizing process. Such neglect of children's emotional worlds leads to

> inner frustration and effectively blocks learning.....
>
> Children have the right to participate in choosing the kinds of material, techniques, and approaches to be used in their educational careers. Because they've lived with their personal learning style all their lives, they are usually the best ones to talk with about how they learn best. (Armstrong, 1987, p. 111)

When students are physically engaged in activities, it is easy to determine their level of interest. Perkins, (1965) demonstrated that, within a classroom, students who are more active in their learning have higher achievement.

Kohn (1993), believes that student apathy, resulting from lack of student choices, can cause students to rebel in a fashion that results in inappropriate behaviors while they are trying to gain power over their own environments. Meyers & Jones (1993) support Kohn by suggesting that, " Children as with all devalued individuals remain powerful, but they are forced to exercise their power in odd, distorted, and limited ways" (p.9). This exertion of power can surface as classroom disruptions; passive aggressive behavior, resulting in poor academic achievement, by not completing assignments; and/or refusal to spend adequate time on assigned tasks.

There have been many probable causes suggested for student

fluctuations in their exhibition of distracting behaviors, diverse amounts of time on task, and fluctuations in both their retention and assessment of academic material.

Suggested probable causes are:

1. parental attitude, being unaware that conditions could be changed to a more comfortable level.;
2. parents, teachers, and staff unaware of diverse learning styles of the individuals in the classroom;
3. lack of programming using the multiple intelligences as a delivery system;
4. satisfaction in present programming resulting in a lack of desire to investigate new methods;
5. students' compliance to the way in which they are presently taught;
6. problems at the facility with room size and equipment that make it more difficult to arrange the environment for diverse activities;
7. workbook assignments in great disproportion to other types of student engagement;

8. too much emphasis placed on teaching to standardized tests;

9. emphasis upon coverage of material, rather than teaching for understanding;

10. lack of importance placed on student choice.

Chapter 3

THE SOLUTION STRATEGY

Review of the Literature

Specific solutions to the problem in todays' schools are cited by a multitude of learned others. All seem to agree on one key issue. Students who are not "hooked" on learning may be a problem in the classroom (Gross,1991). According to Gross (1991), many students are not addicted to the learning process, and do not attend school with an eagerness to learn, or to please teachers and parents. The reason for this is that schools have not developed programming that allows students to become intensely immersed in relevant activity. Since this is so, students are easily distracted, fluctuate with time on task according to the activity they are engaged in, and show limited retention.

Students who are presented with poorly designed plans, or are products of classroom teachers who display inappropriate teaching practices, will later do poorly on assessment (Gross, 1991).

Teachers have looked to educational research for ways to improve

students' involvement and increase learning in school (Levin & Long 1981)..

Recently, researchers have delved into studying the alterable characteristics of students and teachers and their interpersonal relations in the classroom. Attention has been given to the relationship between student achievement and learning, and teachers' use of time and instructional strategies.

The research conducted by Doyle and Ponder (1977), examined what types of alterable teaching approaches had the greatest effect on learning processes and products. Results showed that instructional processes, learning materials, and activities, which are carefully developed, with the specific class in mind, tend to increase the students' ability to focus on relevant aspects of ideas being taught, resulting in mastery of material. Students were also said to have greater retention of material, and an increased understanding of the process of learning, when this personalized planning was evident. The result of carefully developed activities, designed to meet the needs of specific classes, led to increased positive attitudes towards learning, and to increased self-esteem.

The summary of the findings reveals that if material and instructional strategies are made relevant to the learner, and the implementation of plans and activities are carried out with the individual in mind, students' interest and

achievement levels will increase (Levin and Long, 1977).

A major implication of learning and instruction concerns educational practices and students' individual differences. A prevailing view found in research is that not all students are able to learn the material teachers are mandated to teach them. (Campbell,1992)

According to Campbell (1992), educators use the excuse that some students come to school with genetic or environmental handicaps that make them unable to learn. Only rarely is it admitted that, although these differences in truth do exist, students' inability to learn may be a result of the way they are being taught. As stated by Campbell, 1992, pg.15:

> It is true that students do enter formal education with individual differences over which the school has no control. However, these differences must be reflected in the processes of instruction.
>
> If teachers or curriculum developers could identify the cognitive prerequisites for learning (skills or knowledge), and could identify the affective characteristics if the student (attitude, interest, self esteem) and address them, it could conceivably reduce individual differences in student achievement up to 75 percent. Most students would roughly achieve the same level normally attained by only the best students.

Adaptations in instruction do not need to, but, could require an entirely individualized program of instruction . Adaptations in teaching style are one solution to keeping children on task and meeting the needs of individual students. This is necessary to ensure that all students will attain the highest level of achievement possible. Adaptations may be complicated, or as simple as redesigning room arrangement or rearranging the daily schedule (Gardner 1992).

According to Gardner (1992), it is the responsibility of all educators to implement diverse delivery and adaptive tasks in accordance with the strengths and talents of the individual learners. Only by doing this, will each student meet success. Success depends upon several factors:

1) the teacher being cognizant of the student displaying continuous and relevant behavioral patterns and the teacher being sensitive to the messages the students are sending by the behavior they are exhibiting ;
2) willingness of the teacher to alter and correct unsuccessful procedures through formal and informal self-evaluation;
3) the teacher being positive and accepting of students' responses to procedures;

4) teachers possessing the self-confidence that they have the ability to overcome obstacles; (Levin & Long 1981, p. 57)

To lessen distractive behavior in the classroom, students must be involved in their learning. Good (1978), investigated whether student involvement levels were different for high, middle, and low achieving students. Four major types of information were collected for this action research: 1) instructional setting; whole class, small group, large group with teacher supervision; 2) type of activity students were engaged in; writing, waiting for the teacher, walking, talking; 3) the subject matter being presented ; 4) the level of task involvement.

Goodlad (1984), found that the high achievers spent more time on task. The gap between the high and low achievers became greater in the subject areas that have been traditionally emphasized. Students were more involved during mathematics and spelling when they were taking part in the activity of writing.

Additionally, the instructional setting seemed to have a great influence on the rate of involvement. Students' involvement was highest, reaching 86 percent engagement, when they were divided into small groups. They were engaged at an 80 percent level when they were involved in large groups with teacher

supervision. Students' involvement dropped during individual tasks, and student engagement reached its lowest, only 60 percent, in classroom settings where the teacher lectured and students listened.

Results indicate that interaction with others is a key element in active learning, time on task, and a lessening of distracting behavior. Cooperative activities in the classroom could be a key to keeping students engaged in their tasks (Anderson, Everstone & Brophy, 1978).

According to Curwin and Mendler (1988), powerlessness over one's environment often leads to passive aggressive behavior, a build up of resentment in the classroom, and a lessening of time students spend actively involved in learning and cooperating. Discipline with Dignity, a form of discipline implemented in the Rockford Public Schools, is based upon student choice. Giving students power and choices in their own environment is seen as a remedy to discipline problems. Performance will increase as a result of student empowerment. When individuals have choices and control over their environment, they act more responsibly and therefore academic achievement increases.

There is a body of research based on the theories introduced by Howard Gardner (1993). He suggests that the way to get the most out of students is to

treat them as individual learners. His theory of the seven intelligences states that all people are gifted in at least one of seven ways. If an educator is aware of the seven intelligences, is able to identify the talents of the students, and alters material to meet the style of the students, the learner will be more able to successfully accomplish tasks at hand (Armstrong, 1987).

Armstrong (1987), states that society recognizes only a few of the intelligences as valued talents. We value the linguistic person, the person with logical mathematics capabilities, and the person with intrapersonal skills. Yet, there are other valid intelligences that are not recognized.

In the school setting, a teacher who is sensitive to the gifts of students, will increase time on task, increase retention, and limit distracting behavior. According to Campbell (1992), the goal shared by many educators is to diversify teaching strategies in order to engage more students and optimize their learning experiences. The incorporation of the seven intelligences, as a delivery method, is a mode in which to accomplish the above.

Project Outcomes and Solution Component

As a result of incorporating the seven intelligences into the daily routine, and addressing student learning styles during the period of October 1994 to March 1994, the targeted students will increase their retention of academic material, increase their amount of time on task, and decrease

the amount of distracting behavior displayed, as measured by teacher observation, student and parent questionnaires, and academic assessments.

In order to accomplish the objectives of this action research the following strategies will be employed.

1. Students' strengths and weakness in the seven intelligences will be determined.

2. Curriculum and delivery will be altered to incorporate content and strategies that make use of the seven intelligences.

3. Learning style of the students will be determined .

4. Alterations to classroom arrangement will be incorporated.

5. Methods of student assessment will be altered to be compatible with student learning style and multiple intelligence strengths.

6. Teacher assessment will determine the result of the interventions.

During the time period of October 1994 through March 1995, the targeted students will be taught with the multiple intelligences as a delivery method for the mandated third grade curriculum. The process will include the following interventions:

1. Initial questionnaires will be given to students to determine their perception of themselves in the seven areas Gardner states as intelligences.

2. Questionnaires will be completed by parents using observations made

at home, of their childs' strengths and preferences.

3. Teacher observation and anecdotal records will be kept and examined for the purpose of identifying talents in the learners.

4. Observation data will be obtained to determine which activities students find most engaging. This will be in the form of tallies for time on task, and will be used as a comparison with other tallied data.

5. Teaching methods for each thematic unit will include presentations and activities in: interpersonal, intrapersonal, logical mathematical, verbal linguistic, visual spacial, kinesthetic and musical intelligences.

6. Student opinion polls will be taken on which types of presentation are most desirable for each individual.

7. Learning stations will be set up in the classroom, in accordance with the seven intelligences, and students will have the choice of areas in which to work. Assessment will follow in the form of student interviews and written teacher-made tests.

a) Interpersonal center will include books to read in pairs and interactive games and discussion sheets.

b) Intrapersonal center will include books to be read alone. Posters, hidden pictures, puzzles and worksheets to examine.

c) Musical center will contain thematicly appropriate music, raps, and rhythmic sayings.

d) The logical mathematical center will hold math problems in accordance with the theme. There will be also math games using thematic manipulatives to use. Expository literature and science material will also be available.

e) Visual spatial center is a creative area and will contain materials to experiment with artisticly, and creating products that have to do with the theme.

f) Kinestheticly, there will be the opportunity for the students to act out and dramatize pre-written or self-written short skits, as well as choreograph dances, and kinesthetic definitions of vocabulary words.

g) Verbal linguistic center to contain: books, narratives and the use of cassette recorders for listening to tapes and making them available to the class or to small groups.

Methods of Assessment

Student assessment will be in the form of teacher-made tests, analysis of report card grades from November to March, and attitudinal changes, as

evidenced by interviews and surveys, administered at the start and the conclusion of the action research project. Additionally, time on task records, and disciplinary records will be ongoing throughout the action research. These assessment tools will determine if students, identified as having talents in an intelligence and learning style, have greater retention, increased academic performance, and improved behavior, when teaching methods are tailored to their needs.

Chapter 4

PROJECT RESULTS

Historical Description and Intervention

The objective of this action research was to employ a program incorporating multiple intelligences, in harmony with individual learning styles, in the targeted third grade classroom. The intention was to increase student learning by: increasing time on task, increasing retention of academic material, and decreasing fluctuations in distracting behaviors.

This action research spanned the months from September, 1994 to March of 1995. During that time there were no intentional changes in the proposed plan. The targeted population remained constant.

The initial step in the action research was to determine the strengths, the weakness, and the needs of the targeted students. This was accomplished by administering a student survey. A sample is found in Appendix A.

The survey included questions on student's preferences in learning style and teaching methods, with relation to the seven intelligences. It also included questions concerning classroom setting, students' need for increased independence, and their choice of activities in areas of study.

The researcher compiled the results of the student survey and found that students saw themselves as having strengths in the following areas: verbal linguistic, interpersonal, and visual spatial. Additionally, indicated was a preference for choices in classroom activities, and a need for mobility in the classroom.

The graph below indicates the number of students, whose responses placed them in each learning style/intelligence category.

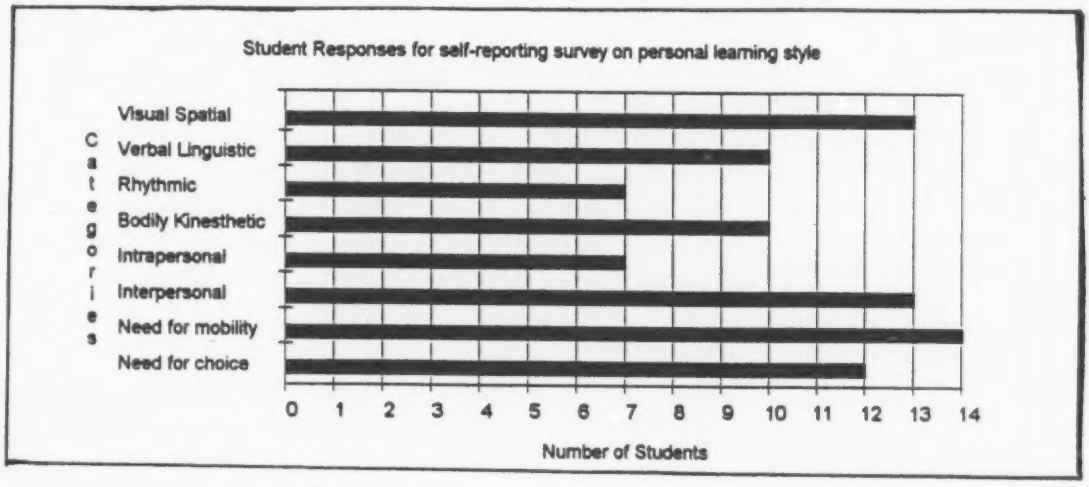


Figure 1

An additional survey was administered to the parents of the targeted students, Appendix B. It was administered because the targeted students are enrolled in a primary grade. The researcher felt it helpful to substantiate student intrapersonal knowledge and responses at this point in the research. Additionally, it gave a clearer picture of the students' behavior and preferences in their most familiar surroundings.

Eleven of the parent surveys were returned. Parents substantiated the responses given by the students. Table 1 indicates the number of parents (with eleven being 100%) who responded that their child exhibited strong characteristics in these areas.

Table 1

Results of Parent Survey as to The Characteristics of Their Child
Number of parents indicating their child could be described as having the listed characteristic

Social	11
Introverted	00
Independent	10
Strength in Art	09
Strength in Language	09
Prefers Bodily Movement	09
Strength in Music	04
Needs Mobility	07

The researcher's observations, student interviews, and parent, and student surveys were used to evaluate the students' preferences, strengths, and weaknesses in the seven intelligences. Observation form and interview form are found in Appendices C and D.

The researcher collated the responses and drew conclusions as to the learning style and preferences of the targeted population, and attempts were made to create a

learning environment to meet individual needs, and establish a comfort level for the entire class. Changes were made in the daily schedule, as well as classroom arrangement. A list of accommodations can be found in Appendix E.

Two substantial changes made in the classroom were: the incorporation of learning centers, based on the seven intelligences, and the initiation of student choices in the thematic unit activities and assignments.

The learning centers were created to fulfill a dual purpose. First, to allow students to work in the area in which they are gifted, and secondly, to broaden their scope of experiences by making new materials available.

The Centers included:

1. a classroom library of varied genre;
2. an area to explore educational tapes, rhythmic selections, and musical instruments;
3. an area containing art and small construction supplies;
4. an area with math manipulatives, logic games, and computation exercises;
5. a quiet area;
6. an interactive area where students could play games, read with a partner, and role play and dramatize;
7. an authors area with writing materials available.

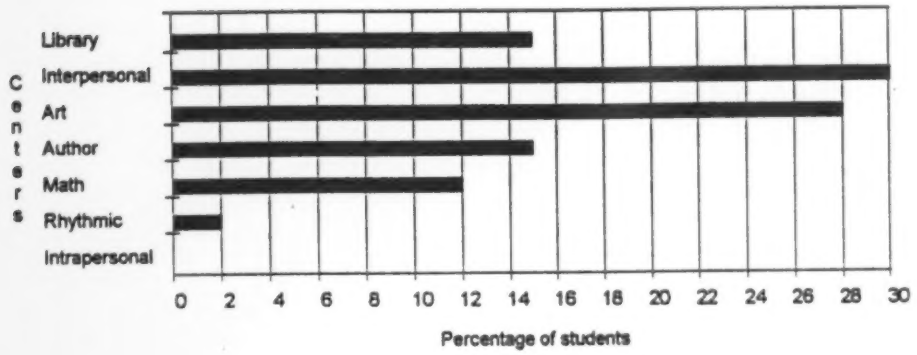
Students were polled to determine whether they preferred learning centers to

seat work as an alternate activity. Unanimously, learning centers were preferred. Learning centers were used when students had extra time, and during an allotted three, half-hour sessions per week.

Student preferences are indicated on the graph on the following page.

Table 2

Learning Center Preference



Results indicate the percentage of students who favored each learning center. The most popular center was the interpersonal, followed by the art center. The author and library centers are evenly favored, followed closely by the math center.

As a result of the survey, the intervention was modified. The rhythmic center was reduced in size and moved to a different location in the room, and the intrapersonal center became a place where students could do their work in quiet groups, journal in their daily logs, and play solitary games.

Students' high rate of independence, as indicated by the student and parent

surveys, initiated an additional accommodation in the targeted classroom. The instructional format in the classroom is thematic units. It was determined that students desired more input as to what assignments and activities would be incorporated in the units. Initially, the researcher perceived that it would be teacher directed.

Presentation of Analysis and Results

The accommodations made in the classroom appear to have had a positive effect on the targeted behaviors. During the action research, discipline problems decreased, with fewer student-teacher conferences and behavioral contracts necessary. This data is recorded, by month, in Table 3.

Table 3

Number of Disciplinary Actions and Frequencies by Month
Sept. 1994 - March 1995

	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	March
Conferences Required	4	4	2	2	1	2	1
Behavioral Contracts Required	6	2	2	1	4	0	0

It should be noted that the same student required a conference monthly. The four behavioral contracts in January, were for two students concerning the same late assignment.

Classroom accommodations positively influenced behavior, as indicated by time on task, reported in Table 4, on the following page.

As indicated by the table, as the school year progressed, time on task increased. This was especially true in active learning situations, when all students were given the opportunity to become engaged with materials, and other individuals.

In the activities observed, the opportunity for student participation varied greatly. Learning center activities were among the most engaging. Cooperative activities such as spell-pair-share and thematic, are short intense bursts of student involvement. Kindergarten buddies are third grade students paired with a kindergarten student, acting as both tutor and mentor.

Table 4

Student TIme on Task

Date	Activity	Number of Students Observed	Length of Observation	Time on Task	Disruptive Behaviors
9-19	read to	17	15 min.	2 min.	28
9-28	read to	17	15 min.	10 min.	04
10-28	Computer Lab	5	20 min.	15 min.	02
11-8	Kindergarten Buddies	5	20 min.	20 min.	00
11-28	Learning Centers	5	30 min.	20 min.	02
12-7	Spelling Pair-Share	5	20 min.	20 min.	00
1-12	Stone Soup Operetta	19	40 min.	40 min.	00
2-2	Learning Centers	5	30 min.	20 min.	00
3-3	Thematic Planning	10	20 min.	20min.	00

During the course of the action research project, student choice was examined

as a way to diminish distractive behavior, increase time on task, and enhance academic performance. Time on task data indicates that increased freedom to choose was effective. When students were engaged in learning centers or in computer lab, distracting behavior became less frequent and time on task improved, as did academic performance. Following the activities on September 19th, September 28th, December 7th, and January 12th, objective teacher made assessments were administered. Table 5 indicates the type of assessment and student performance.

Table 5

Academic Assessment Records
September 1994 - March 1995

Date	Type of Assessment	Average Class Grade
9-19	objective recall - written assessment	65.00%
9-28	objective recall - written assessment	95.66%
12-7	spelling test	85.25%
1-12	school wide performance	100.00%

During the action research students gained an appreciation for other types of work, as illustrated in the survey " Is it fair?" in Appendix E. This survey was administered in October and March. Results indicate that on October 14, of the seventeen students surveyed, fourteen, felt that the only way to earn a fair grade was for everyone to do the same assignment. All seventeen students felt that a culminating written assignment was the most difficult. In March, when asked the same questions,

thirteen of the seventeen students had changed their opinions. They now felt that many alternatives could be used for assessment, they became familiar with a generic rubric, and understood how grades could be based upon ones' individual work. A majority of ten, still felt that a written report was the most difficult type of culminating activity, however, not the most time consuming.

Academic assessment made after the action research indicates an improvement in both academic subject areas, and social skills.

Table 6
Report Card Grades
November 1994 to March 1995

Subject	Nov.1994			March 1995		
	Excellent	Sat.	Unsat.	Excellent	Sat.	Unsat.
Reading	10	07	0	12	05	0
Language	08	09	0	13	04	0
Social Studies	07	10	0	12	05	0
Art	00	17	0	05	12	0
Music	00	17	0	09	08	0
Physical Education	06	11	0	08	09	0
Science	02	15	0	09	08	0

Table 7
Social Skills

	November 1994		March 1995	
	Needs Improvement	Sat.	Needs Improvement	Sat.
Controls talking	4	12	2	14
Makes good use of time	7	7	2	12
Shows Self Control	3	13	1	15

Conclusions and Recommendations

Based on the presentation and analysis of the data on discipline referrals, time on task, student disruptions, and retention of academic material, the targeted students have shown marked improvement in all areas. Determining learning style and strengths in the multiple intelligences appeared to provide them with opportunities to learn in an environment conducive to their needs. This working environment not only facilitated them in their improvement, but made the classroom a friendlier place.

Incorporating more student decision making increased their independence, resulting in less teacher direction, and less time spent on discipline. Therefore, greater amounts of academic material were covered, resulting in increased learning. Acts of rebellion became nonexistent when students were able to choose assignments and activities.

Recognizing the needs of the students, and making appropriate changes in the classroom has been the most beneficial part of this action research project. Incorporating learning centers, has kept the students both busy and interested, with worthwhile activities in which to participate. Learning centers throughout the classroom have also served as a vehicle to allow the students the mobility the initial survey indicated they needed. The learning centers directly encourage cooperative learning and growth in interpersonal skills.

In reviewing this action research project, the researcher felt it was a worthwhile

endeavor. Both the targeted students and the researcher benefited from the activities involved.

A recommendation to colleagues would be to take the time to know your students. Pre and post surveys, and questionnaires are a dependable way to assess the needs of the children in the classroom. Gathering information on learning style and multiple intelligences is a secure way to begin the process of meeting their needs.

If this researcher were to attempt to do this action research again, a simpler approach would be used. One alternative might be to use the same problem statement, with a more limited action plan. Another alternative might be to alter the problem statement to address only learning style or multiple intelligences. This researcher would not attempt, nor advise colleagues to use dual characteristics of learning style and multiple intelligences. Doing so makes intervention multifaceted, and somewhat overwhelming.

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Appendix A

Student Survey

Mark a yes or no on the line in the front of the question.

___ I like to be able to pick out my own books
___ I wish everyone would work at their seats.
___ I like to work with people on the same assignment.
___ I would rather tell about something than write.
___ It helps me see an example before I start my work.
___ I like math best of all subjects.
___ Spelling tests are my favorite kind of tests.
___ I like to do plays.
___ I like to read aloud in class.
___ I would rather read along silently.
___ I like the curtains closed.
___ I like the base group idea of helping each other.
___ I would like to be responsible for only myself.
___ If someone describes how long something is it helps me to measure it.

___ When people read to me I see pictures in my head.
___ It is easy to remember words to songs.
___ Art is hard for me.
___ I would rather write about something I did than make up a story.
___ When I am outside I play hard.
___ When I am outside I like to walk around and relax.
___ I need a break during the day to play Simon Says or Silent Speed Ball.

___I like to lay down or lean when we are at the rug.
___ At Center time I usually choose something to do alone.
___ My favorite center is the game center, where I can play with a lot of people.

___ It is hard for me to remember what color day it is.

___ It helps me to have signs up to remind me of our schedule.
___ I like to go to the board.
___ I would rather play math games than do work in the book.
___ Creative writing is especially easy for me.
___ I can shut my eyes and remember where people sit in the room.

___ I wish we had sharing time everyday.
___ I like to use the math cubes.
___ At centers I often play with pattern blocks.
___ I pick the listening center to visit often.
___ At center time I move from one to the other.
___ During school I like to sit close to my friends.
___ I like the door closed.
___ I relax best when my eyes are closed.
___ I like to listen to my teacher read poems.
___ When someone describes something fuzzy I can feel it and see it.

___ I like a book better if it has pictures.
___ There always seems to be someone distracting me.
___ I can usually do my work without paying attention to other kids.

___ I like to draw better than write.
___ I like to write better than draw.
___ I make up clues and rhymes to help me remember.
___ I like to work with a time limit.
___ I reread things again to make sure I understand.
___ I am comfortable asking questions.
___ I like to do KWL charts to keep track of what I learned.
___ It helps me to keep a learning journal.
___ I like to work in cooperative groups.

Appendix B
Parent Survey

Name of Child _____ Date _____

Please use a plus or minus on each of these statements.
+ means yes
- means no (Again this is just a survey. Mark your initial thought.)

___ enjoys writing

___ asks a lot of questions about how things work or are put together

___ makes up stories, makes up jokes and plays teasing verbal games

___ understands math concepts such as more and less

___ has a good memory for names, places, dates

___ seems to have a strong will

___ acts independently of others

___ tells you when music sounds "funny" i.e.:. radio not tuned in

___ can ride a bike, jump rope, run, and move well

___ moves, twitches, taps, or fidgets when having to sit for a long time (over 15 minutes)

___ enjoys interesting art in books or other forms

___ asks to see the picture when you are reading

___ can report to you clearly what he/she is seeing (describe a scene from a book or in person)

___ mimics or imitates others' gestures and mannerisms

___ loves to take things apart and put them together

___ seems to daydream a lot

___ likes to play games with other kids

___ has two or more close friends

___ is able to make mistakes and learn from them

___ has good self esteem

___ shows concern for others

___ hums

___ has a good singing voice

___ enjoys working with clay, mud, play dough

___ can play happily alone

___ tries to write using developmental spelling

___ enjoys being read to

___ has a good vocabulary for his/her age

___ understands cause and effect or why things happen

___ likes to watch movies or slides

___ builds well with blocks or Legos

___ enjoys art activities

___ doodles

___ other children seek his/her company

___ seems to be a natural leader

___ has a special interest or hobby

___ talks with his/her hands making a lot of movements

___ is sensitive to environmental noise i.e.: rain on the roof, background music

___ taps to a beat

___ makes up movements or dances to songs

___ would rather work alone than with others

___ does not want help when trying to do something alone

___ is quick to ask for help when things get hard

___ likes to touch things that he/she sees

___ will "read" a story using picture cues

___ plays games like checkers, chinese checkers, tic tac toe

___ can categorize i.e.: pair socks, put away silverware, arrange things tallest to smallest

Appendix C
Accommodations based on Student Survey

Noted according to survey:

1) The children in the targeted classroom need rhythmic activities;
2) The children in the targeted classroom show a preference for visual spatial activities with a strong preference for imagery;
3) The children are very social;
4) distractability is not a problem;
5) individuals show a variance in lighting and seating preference.
6) individuals show a strong sense of independence and self-confidence
7) individuals show a variance in their strengths in the multiple intelligences

Accommodations include based on conclusions:

1. Base groups of four. Children are allowed to talk at will during work time.
2. During work time, after the assignment has been given students may move to another part of the room. Children will be given the opportunity to read aloud daily from a book they have prepared. Two students per day. They may role play characters.
3. Two rugs will be provided. One for direction giving, direct instruction, and the other for more informal gatherings. Here students may lay or lean. Cushions will provided to use as pillows.
4. The student library should include audio tapes as well as poetry books.
5. Teacher readings will vary according to theme, but will include some student choice.
6. Thematic books will be presented to the students to review and vote on rather than teacher choosing the literary selection.
7. Time will be given during the day to take a break of some kind using our bodies to move about.
8. Imagery will be used as a means of relaxation during times of stress or as a cool down.
9. Old plastic curtains will be removed from the windows.
10. Children may open and close door at their leisure.
11. Class participation will be a large part of the day with children taking an active part at the board and short share pairs.
12. The class will be given the opportunity to create and to perform in plays.
13. Centers incorporating the multiple intelligences will be activated whenever possible.

Appendix D

Student Observation Form:
Anecdotal Records-

Time on Task

1.	10
2.	11.
3.	12.
4.	13.
5.	14.
6.	15.
7.	16.
8.	17.
9.	

Appendix E
Student Interview

Intrapersonal Interpersonal
Would you rather work alone or with others?

Do you like to take time to think quietly before you do something or would you rather brainstorm and eliminate later?

Do you get your best ideas from silence or sharing with other people?

Do you think you get a better grade when you work alone or with others?
Which is more fun?

Do you trust others to do their share?

Mathematical Logical

Do you like to get a demonstration in math before you start?

Do you think working and figuring out problems is fun?

Do you get frustrated easily?

What frustrates you the most or what makes it most fun?

Would you rather work with numbers or logic problems?

Would you rather work alone or with a partner?

Visual Spatial

Does it help when we act something out like the trumpeter swans wing span?

Would you rather be read to or watch TV?

Do you like to read or be read books with illustrations or doesn't it matter?

Is it easy for you to picture things in your head?

When you do an art project do you see it done in your head before you start?

Verbal Linguistic

Are you comfortable talking in front of the class?

Would you rather tell a story or read a story?

Would you like to make announcement in the morning on the speaker?

Have you done a book for Young Authors?

Do you read to relax?

About how much time do you spend reading each day?

At lunch are you one of the people who talks a lot while you eat?

Do you like to learn and use new long words?

Bodily Kinesthetic
Do you like P.E. or look forward to recess?
Do you like to act out stories?

Do you like it when we get up and role play?

Do you like to play charades with the class?

Do you play on any organized sports teams ?

Do you take any lessons that involve your body like karate, dance, gymnastics?

Musical Rhythmic

Do you take any lessons involving music?

Do you like to sing to the radio?

Do you have a favorite group?

When you hear a song is it hard to get it out of your mind?

Do you ever uses poems to remember things like 30 days has September?

Was it easy to remember the things we learned to music like "Stone Soup"?

Choose one of the two words or phrases for your best working environment
I like to sit or move in class
I like activity or quiet
I like brightness or dull light
I like to talk quietly or have silence
I like to sit alone or with others
I like to sit or sometimes lay
I can , can not work with a music playing
I learn best when you tell me or show me

I bounce ideas of others or off myself
I notice or do not notice when others get up
I like a schedule that sometimes changes with our work load or I like to expect the same thing each day at the same time

---

Is it fair?

if some people write a report for a project and others draw a picture

if a group works on a report and others do it alone

if some people have 10 words for spelling and others have 20

if some people go the same center almost all the time

if some people tell me the answers to their test instead or writing them

if some people draw instead of write in their personal journals

Appendix F

Sample Lesson Plan Form

Theme: _____

Time Allotted:_____

Literary Selection to be read by the class:_____

Author:_____

Supporting Literature:_____

Activities:

_____

Verbal Linguistic:

_____

Visual Spatial:

_____

Mathematical Logical:

_____

Rhythmic:

_____

Bodily Kinesthetic:

_____

Interpersonal: Intrapersonal:

Appendix G

Examples of culminating activities for the study of the Middle Ages.

Students may work alone, as partners, or in cooperative groups.
Choices include:

Visual Spatial
papier mache dragon;
model of a castle ;
a replica of a weapon;
a piece or armor;
sewing of a common garment;
a replica of art work indicative of that time period.

Bodily Kinesthetic
a simulation of some type;
jousting,
King Arthur's round table,
an act as a court jester,
role playing from a literary selection

Verbal Linguistic
Creating your own dialogue for a drama;
Reading an additional literary selection and reporting on it;
Researching a relevant topic and doing a report;

Mathematical Logical
Creating story problems using characters and situations from the time period;
Researching the time involved in the building of a structure;
Researching the number of servants and slaves in a castle;
Researching the size and number of rooms in a castle;

Musical and Rhythmic;
recite poems about supporting subjects;
write a poem or choral reading;
research music of the period and bring in an example;
write a rap to help us remember some of the facts we have learned.

Rubric

	3	2	1
Timeliness	complete on date due	extension within theme	prolonged delay
Complexity and completenesss	obvious time spent and documented	no documentation	lack of time obvious
Neatness and accurate	neat and accurate	non consequential errors	incorrect information or illegible
Familiarity with subject	is able to explain and answer questions	can explain and and answer with prompting	unable to elaborate